

**Amendments to the Specification:**

Please amend the specification as follows. All page and line numbers refer to those appearing in the subject International Publication Number WO 2005/008858 A1.

Please **add** the Priority Information paragraph to the specification by inserting the following new paragraph before the first line of the specification:

This application is a National Stage Application filed under 35 U.S.C. § 371 of PCT/KR2002/001779, filed on July 16, 2004, which claims priority of KR Application No. 10-2003-0048873, filed July 16, 2003.

Please replace the line beginning on page 1, line 4, with the following amended line:

-- ~~Technical Field~~ FIELD OF THE INVENTION --

Please replace the paragraph beginning on page 1, line 5, with the following amended paragraph:

--The present invention relates to an apparatus for controlling power supplied to a load, and more particularly to an electric power controller for a vehicle capable of controlling power supplied to a vehicle load.--

Please replace the line beginning on page 1, line 10, with the following amended line:

-- ~~Background Art~~ BACKGROUND --

Please replace the paragraph beginning on page 1, line 12, with the following amended paragraph:

-- An apparatus for controlling power (for example, an intelligent power switch (IPS)) determines whether a power supply providing power to a load is normally

operated, and breaks power to protect the loads against any abnormal state when an abnormal state occurs. However, a prior art electric power controller had been operated to detect only overheating generated in a power line and cut power so as not to supply power to the load. Therefore, in the case that a transient current is generated in power supplied to the load, the prior art electric power controller cannot detect any abnormal state before overheat is generated in a power line. Also, if a current quantity is transiently exceeded or if there is an intermittent short that a state that a current quantity is transiently exceeded occurs repeatedly, overheating does not occur in a power line, and thus the prior art electric power controller cannot interrupt power supplied to load.--

Please replace the paragraph beginning on page 2, line 12, with the following amended paragraph:

-- Meanwhile, even though there are some examples, such as systems and products, which adopt such a prior art electronic power controller, it has never been adopted to a vehicle. However, as vehicle features ~~increases~~ increase, special functions or high quality parts/circuits, which are installed in a vehicle according to an owner's selection, have now become a standard feature such that they are installed in vehicles. Therefore, a plurality of deluxe parts/circuit wirings are installed in vehicles currently coming onto the market. In a prior art vehicle, its parts/circuits are protected against abnormal state using a connection configuration of a fuse or relay circuit, which requires a plurality of wirings which consume a relatively large area therein, and increases manufacturing costs (Refer to Fig. 4). Also, the prior art electric power controller cannot protect vehicle load against a transient current, but instead must utilize relatively expensive power lines.--

Please replace the line beginning on page 4, line 16, with the following amended line:

-- ~~Disclosure of the Invention~~ SUMMARY--

Please replace the paragraph beginning on page 5, line 19, with the following amended paragraph:

--In accordance with an aspect of the present invention, the above and other objects can be accomplished by the provision of an electric power controller for a vehicle which comprises an overheat detector for detecting whether a power line supplying power from a vehicle battery to vehicle load is overheated, a voltage detector for detecting a voltage of the vehicle battery, a voltage converter for converting power from the vehicle battery into a proper voltage and outputting a switching control signal reflecting the proper voltage, a switching unit for performing ON/OFF switching operations based on the switching control signal to control power from the vehicle battery to the vehicle load, and a controller for inputting an overheat signal from the overheat detector and the voltage from the voltage detector, determining whether there is an abnormal current, and outputting a switching control signal, corresponding to a ~~result to analyze~~ a change of the voltage, to the switching unit.--

Please replace the paragraph beginning on page 7, line 11, with the following amended paragraph:

-- Therefore, when power is broken due to an abnormal current, in order to re-operate a vehicle load, the prior art technique using a fuse and relay circuits requires repair of the vehicle such as replacement of the fuse. However, the above construction of the present invention can easily re-operate the vehicle load. For example, the

present invention can enable a user to re-operate the vehicle load by pressing buttons such as a reset button while he/she is driving the vehicle, though. Even though operation of vehicle load is not preferable while a transient current occurs, it is necessary to drive a vehicle in urgent situations. Of course, according to the features of the present invention as will be described later, the magnitude of effective power of power outputted from the switching unit 115 can be adjusted, even in a state that transient current occurs.

Please replace the paragraph beginning on page 9, line 15, with the following amended paragraph:

-- Therefore, the present invention can reduce voltage supplied to a vehicle load to a proper voltage when transient current is inputted thereto, therefore the vehicle load can be stably operated.--

Please replace the line beginning on page 10, line 19, with the following amended line:

-- ~~Description of the Drawings~~ BRIEF DESCRIPTION OF THE DRAWINGS --

Please replace the paragraphs beginning on page 11, line 2, with the following amended paragraphs:

-- Fig. 2a is a waveform of input voltage of a switching unit according to the present invention;

Fig. [[3]] 2b is a waveform of output voltage of a switching unit according to the present invention;

Fig. [[4]] 3a is a block diagram illustrating a prior art circuit for controlling windshield wipers;

Fig. [[5]] 3b is a block diagram illustrating an electric power controller of a

vehicle for controlling windshield wipers;

Fig. [[6]] 4 is a perspective view illustrating an electric power controller for a vehicle installed in a printed circuit board of a junction box by compliant pins of the electric power controller; and

Fig. [[7]] 5 is an enlarged perspective view illustrating an electric power controller for a vehicle.--

Please replace the line beginning on page 11, line 19, with the following amended line:

-- ~~Best Mode~~ DETAILED DESCRIPTION OF THE EMBODIMENTS--

Please replace the paragraphs beginning on page 12, line 15, with the following amended paragraphs:

-- The vehicle battery 101 supplies its power to a variety of vehicle loads such as vehicle load 121 through a power line ~~402~~ 120. Here, the vehicle load 121 includes an air conditioner, headlights, fog lights, fans, a CDP, a navigator, a vehicle PC and the like.

The overheat detector 111 detects whether the power line ~~402~~ 120 is overheated, and transmits an overheat detection signal to the controller 109 if overheating is detected in the power line ~~402~~ 120. Here, the overheat detector 111 was already well-known in the field of the electronic power controller before filing the present application, therefore a detailed description thereon will be omitted in this application.

The voltage converter 113 inputs and converts power from the vehicle battery ~~111~~ 101 into a proper voltage. After that it outputs a switching control signal, reflecting the proper voltage, to the switching unit 115. The switching unit 115 performs

ON/OFF switching operations according to the switching control signal to control flow of power from the vehicle battery 101 to vehicle load 121. If the controller 109 inputs an overheat detection signal from the overheat detector 111, it then outputs a switching control signal 112, corresponding to an OFF state, to the switching unit 115.

Please replace the paragraph beginning on page 14, line 11, with the following amended paragraph:

-- According to an aspect of the present invention, the controller 109 inputs the voltage 104 from the voltage amplifier 105 and analyzes changes of the voltage 104 to determine whether there is an abnormal current. Therefore, even though the state occurs in the prior art, but the present invention can detect the abnormal current before the power line 120 is overheated. Also, since the voltage 104 is analyzed, the present invention can detect a case where a current quantity is transiently exceeded or an intermittent short that a state that a current quantity is transiently exceeded occurs successively. If the abnormal current is detected, the controller 109 generates a switching control signal 112 corresponding to an OFF state to break power supplied to vehicle load 121.--

Please replace the paragraph beginning on page 16, line 2, with the following amended paragraph:

-- As such, when power is broken due to an abnormal current, in order to re-operate vehicle load, the prior art technique using a fuse and relay circuits requires repair of the vehicle such as replacement of the fuse, etc. However, the above construction of the present invention can easily re-operate the vehicle load 121. For

example, the present invention can enable a user to re-operate the vehicle loads 121 by pressing buttons such as a reset while he/she is driving the vehicle. Even though operating vehicle loads 121 is not preferable while a transient current occurs, it is necessary to drive a vehicle in urgent situations. Of course, according to the features of the present invention as will be described later, the magnitude of effective power of power outputted from the switching unit 115 can be adjusted, even in a state that transient current occurs.--

Please replace the paragraph beginning on page 17, line 8, with the following amended paragraph:

-- The feature of the above aspect is described with reference to Fig. [[2]] 2a.--

Please replace the paragraph beginning on page 17, line 15, with the following amended paragraph:

-- Accordingly, when occurrence intervals of switching control signals corresponding respectively to ON and OFF states are adjusted, the switching unit 115 inputs an input voltage in the form of DC as shown in Fig. [[2]] 2a and outputs an output voltage in the form of pulses as shown in Fig. [[3]] 2b. Therefore, the controller 109 of the present invention adjusts the ON/OFF occurrence intervals to control the number of pulses, intervals, and widths etc, thereby controlling the magnitude of effective power of the power outputted from the switching unit 115.--

Please replace the paragraphs beginning on page 18, line 22, with the following amended paragraphs:

-- Fig. [[4]] 3a is a block diagram illustrating a prior art circuit for controlling

windshield wipers, and Fig. ~~[[5]]~~ 3b is a block diagram illustrating an electric power controller of a vehicle for controlling windshield wipers.

First of all, the acronym IPM in Fig. ~~[[5]]~~ 3b stands for an Intelligent Power Module, which was devised for the electronic power controller according to the present invention. Also, the CPU of Fig. ~~[[5]]~~ 3b is a controlling unit for controlling windshield wipers of a vehicle may be a central processing unit.

In comparison with Figs. ~~[[4]]~~ 3a and ~~[[5]]~~ 3b, the prior art technique requires a fuse, a relay circuit and 12 power lines, which complicates the prior art system and increases manufacturing costs. However, the present invention does not require a fuse and relay circuit, even though an IPM is added thereto, and reduces the number of power lines to four. Also, with reference to Fig. ~~[[5]]~~ 3b, since the IPM can control the magnitude of power supplied to the windshield wipers, a motor (MTR) for the windshield wipers can be operated at a high speed (HI) and low speed (LO). Also, since an automatic windshield wiper function is integrated therewith, the circuit can be simply implemented therein. Accordingly, the present invention can reduce the manufacturing costs to less than half those of the prior art, and simply implement wirings.--

Please replace the paragraph beginning on page 20, line 9, with the following amended paragraph:

--The features of the above aspect of the present invention will be described with reference to Figs. ~~6 and 7~~ 4 and 5.--

Please replace the paragraph beginning on page 21, line 12, with the following amended paragraph:



-- Meanwhile, even though the embodiment of the present invention is described through Figs. ~~6 and 7~~ 4 and 5 as the electric power controller is implemented with a module, the electric power controller may be implemented within a housing. Also, the housing may be further implemented to include compliant pins therein.--

On page 23 at line 23 please delete --~~Industrial Applicability~~--

An abstract on a separate sheet is attached as required under 37 CFR 1.72(b).  
Please insert the attached abstract, following the claims.